PATENT
Atty. Dkt. No. APPM/004515/DSM/PRT/JP

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**



In re Application of: Bang, et al.

Patent No.: 7,011,710 B2

Issued: March 14, 2006

Serial No.: 09/832,168

Filed: April 10, 2001

For: Concentration Profile On Demand Gas Delivery System (Individual Divert Delivery System)

Group Art Unit: 1763

Examiner: Rudy Zervigon

**Certificate**

AUG 17 2006

**of Correction**



Certificate of Correction Branch
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

CERTIFICATE OF MAILING
37 CFR 1.8
I hereby certify that this correspondence is being deposited on August 11, 2006 with the United States Postal Service as First Class Mail in an envelope addressed to: Certificate of Correction Branch, Commissioner for Patents, P.O. Box 1450 Alexandria, VA 22313-1450.

August 11, 2006 (Date) — (Signature)

Dear Sir:

**REQUEST FOR CERTIFICATE OF CORRECTION**

Attached is a Certificate of Correction for correcting several errors in the claims of the printed patent.

Applicants submit that the errors mentioned above were not by the applicant, but were made during the printing of the patent.

Please refer to the Amendment After Allowance as filed by the applicant on May 19, 2005, as well as the Reponse to Rule 312 Communication dated August 4, 2005.

Respectfully submitted,

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PTO/SB/44 (04-05)
Approved for use through 04/30/2007. OMB 0651-0033
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

(Also Form PTO-1050)

# UNITED STATES PATENT AND TRADEMARK OFFICE

## CERTIFICATE OF CORRECTION

PATENT NO : 7,011,710 B2 

APPLICATION NO. : 09/832,168

DATED : March 14, 2006

INVENTOR(S) : Won BANG, Yen Kun WANG, Yeh Jen KAO

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

In the Claims:

Column 8, Claim 1, Line 5: Replace "connectedto" with "connected to"

Column 8, Claim 1, Line 6: Replace "anda" with "and a"

Column 8, Claim 4, Line 32: Replace "valeve" with "valve"

Column 8, Claim 5, Line 49: Please replace:

"at least one intermediate valve connected between the gas source and the valve."

with the following:

"at least one input valve connected between a gas source and the valve, the input valve having a plurality of inputs selectably connected to a plurality of gas supplies of the gas source and an output connected to the valve input."

Column 8, Claim 8: Please replace the claim with the following:

"An apparatus for delivering processing gas from a vaporizer to a processing system, comprising:
a valve means for selectively delivering gas to a processing system input and to a bypass line, the valve means being connected between the vaporizer and the processing system, wherein the valve means comprises a valve having a valve input connected to a vaporizer output and a first valve output connected to the processing system input and a second valve output connected to the bypass line;
a controller means for switching the valve means between the processing system input and to the bypass line; and
a second valve means connected between a carrier gas source, a divert gas source and the vaporizer, the second valve means having a first valve input connected to the carrier gas source, a second valve input connected to the divert gas source, and a valve output connected to a vaporizer input."

Column 9, Claim 9: Please replace the claim with the following:

"The apparatus of claim 19 wherein the controller means is connected to switch the second valve means between the first valve input and the second valve input."

MAILING ADDRESS OF SENDER (Please do not use customer number below):
B. Todd Patterson
Patterson & Sheridan LLP
3040 Post Oak Blvd, Suite 1500
Houston, TX 77056

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 09/832,168 | 04/10/2001 | Won Bang | 004515 | 8789 |

32588 7590 08/04/2005

APPLIED MATERIALS, INC.
2881 SCOTT BLVD. M/S 2061
SANTA CLARA, CA 95050


| EXAMINER | |
|---|---|
| ZERVIGON, RUDY | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 1763 | |

DATE MAILED: 08/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| Response to Rule 312 Communication | Application No. | Applicant(s) | |
|---|---|---|---|
| | 09/832,168 | BANG ET AL | |
| | Examiner | Art Unit | |
| | Rudy Zervigon | 1763 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

1. ☒ The amendment filed on *23 May 2005* under 37 CFR 1.312 has been considered, and has been:

   a) ☒ entered.

   b) ☐ entered as directed to matters of form not affecting the scope of the invention.

   c) ☐ disapproved because the amendment was filed after the payment of the issue fee.
   Any amendment filed after the date the issue fee is paid must be accompanied by a petition under 37 CFR 1.313(c)(1) and the required fee to withdraw the application from issue.

   d) ☐ disapproved. See explanation below.

   e) ☐ entered in part. See explanation below.

Rudy Zervigon 7/12/5

Rudy Zervigon
Primary Examiner
Art Unit: 1763

U.S. Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450

| APPLICATION NO./ CONTROL NO. | FILING DATE | FIRST NAMED INVENTOR / PATENT IN REEXAMINATION | ATTORNEY DOCKET NO. |
|---|---|---|---|
| | | | |

09/832,168

| EXAMINER | |
|---|---|
| ART UNIT | PAPER |
| | 20050712 |

DATE MAILED:

**Please find below and/or attached an Office communication concerning this application or proceeding.**

Commissioner for Patents

Rudy Zervigon
Primary Examiner
Art Unit: 1763

PTO/SB/08a (08-03)
Approved for use through 07/31/2006. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE


Substitute for form 1449A/PTO

# SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT BY APPLICANT

*(Use as many sheets as necessary)*

Sheet 1 of 1

| *Complete if Known* | |
|---|---|
| *Application Number* | 09/832,168 |
| *Filing Date* | April 10, 2001 |
| *First Named Inventor* | Bang, et al. |
| *Art Unit* | 1763 |
| *Examiner Name* | Rudy Zervigon |
| *Attorney Docket Number* | AMAT/4515/DSM/PMD/JW |

## U.S. PATENT DOCUMENTS

| Examiner Initials* | Cite No.[1] | Document Number: Number - Kind Code[2] (*if known*) | Publication Date MM-DD-YYYY | Name of Patentee or Applicant of Cited Document | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear |
|---|---|---|---|---|---|
| RZ | A1 | US-4,761,269 | 08/02/1988 | CONGER, ET AL | |
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## FOREIGN PATENT DOCUMENTS

| Examiner Initials* | Cite No.[1] | Foreign Patent Document: Country Code[3] - Number[4] - Kind Code[5] (*if known*) | Publication Date MM-DD-YYYY | Name of Patentee or Applicant of Cited Document | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear | T[6] |
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| Examiner Signature | Rudy Zervigon | Date Considered | 8/3/05 |
|---|---|---|---|

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1] Applicant's unique citation designation number (optional). [2] See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3] Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [5] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. [6] Applicant is to place a check mark here if English language Translation is attached.

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Application of: Bang, et al.

Serial No.: 09/832,168

Confirmation No.: 8789

Filed: April 10, 2001

For: Concentration Profile on Demand Gas Delivery System (Individual Divert Delivery System)

§ Group Art Unit: 1763

§ Examiner: Rudy Zervigon

MAIL STOP ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

CERTIFICATE OF MAILING
37 CFR 1.8
I hereby certify that this correspondence is being deposited on May 19, 2005, with the United States Postal Service as First Class Mail in an envelope addressed to: Mail Stop Issue Fee, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

May 19, 2005 (Date) — (Signature)

## AMENDMENT AFTER ALLOWANCE

Following mailing of a Notice of Allowance on April 7, 2005, Applicants request entry of the following amendments. **Amendments to the Specification** are shown beginning page 2 of this paper. **Amendments to the Claims** are shown beginning on page 5 of this paper. **Amendments to the Drawings** begin on page 8 of this paper. **Remarks** begin on page 9 of this paper.

**IN THE SPECIFICATION:**

Please replace paragraph [0002] with the following amended paragraph:

[0002] In the production of integrated circuits, many processing methods require one or more reactive chemicals or precursors to be deposited onto a substrate in an atmospherically-controlled heated reactor or chamber. The precursors typically are converted from a solid or liquid state into a gaseous or vapor state to achieve a high degree of uniformity by vapor deposition. The precursor vapor, once generated, is directed into a reaction chamber and forms a deposited layer on the substrate. This process is typically called chemical vapor deposition or "CVD". The deposited precursor chemical may form fine crystalline or amorphous layers which are required for creating microcircuits on the substrate.

Please replace paragraph [0006] with the following amended paragraph:

[0006] Figure 1 is a graphical illustration showing the standard flow response of vaporized liquid of a typical liquid injection system. The transient state due to the inherent rise time effect of the LFM[[, as]] is indicated by [[$t_r$]] rise time, before liquid stabilizes to set point flow varies from liquid to liquid and from chamber to chamber. The transient film property at the film interface where film starts to grow can not be controlled and results in uncontrolled and inconsistent dopant concentration.

Please replace paragraph [0009] with the following amended paragraph:

[0009] Therefore, there is a need for a process gas delivery system that improves dopant concentration control, particularly at film interfaces. More specifically, there is a need for accurate control of a vaporized liquid supply.

Please replace paragraph [0033] with the following amended paragraph:

[0033] During a second period, vaporizers A and C remain in processing mode while vaporizer B is switched to divert mode. Vaporizer B is switched to the second input to receive carrier gas from the divert carrier gas source at 6 slm, and the vaporizer output from vaporizer B is diverted to the foreline of the exhaust system. Vaporizers A and C receive carrier gas from the process carrier gas source at 3 slm each because vaporizer B has switched its input to the divert carrier gas source. During the second period, a liquid precursor B, such as a dopant, may be introduced into the vaporizer for liquid precursor B by opening the LFM that controls flow of liquid precursor B. Preferably ~~preferably~~, the duration of the second period is sufficiently long for stabilization of the liquid precursor flow and vaporization. The concentration gradient of the vaporized precursor B due to the rise time of the LFM is thus eliminated from processing in the chamber because the vaporizer output during the rise time of the LFM is diverted to the foreline of the exhaust system.

Please replace paragraph [0037] with the following amended paragraph:

[0037] Figure 4 is a graphical illustration of an example process for depositing a silicon oxide film having step-wise dopant concentration onto a substrate in the chamber utilizing one embodiment of the individual divert gas delivery system as shown in Figure 2. The liquid precursors include TEOS, TEB and TEPO ~~TEP~~, and three vaporizers are utilized, one vaporizer for each liquid precursor. As shown in Figure 4, at $t_1$ liquid precursor TEOS is introduced (*i.e.*, LFM opened) into a first vaporizer operating in divert mode until vaporization of liquid precursor TEOS is stabilized at $t_3$, typically in about 6-10 seconds. At $t_3$, the first vaporizer is switched to process mode to direct vaporized process gas containing vaporized TEOS into the chamber to form a layer of film on a substrate in the chamber. At $t_2$, the liquid precursor TEB is introduced into a second vaporizer operating in divert mode until vaporization of liquid precursor TEB is stabilized at $t_5$, typically in about 6-10 seconds. At $t_5$, the second vaporizer is switched to process mode to direct vaporized process gas containing vaporized TEB into the chamber to

dope the silicon oxide film with boron. At $t_4$ liquid precursor TEPO is introduced into a third vaporizer operating in divert mode until vaporization of liquid precursor TEPO is stabilized at $t_6$, typically in about 6-10 seconds. At $t_6$, the third vaporizer is switched to process mode to direct vaporized process gas containing vaporized TEPO into the chamber to dope the silicon oxide film with phosphorus in addition to the boron dopant to form BPSG

Please replace paragraph [0040] with the following amended paragraph:

[0040] The individual divert gas delivery system is capable of providing vaporized precursors into a process chamber without the rise time effects or concentration gradient typically associated with LFMs that control flow of liquid precursors into vaporizers. Also, the individual divert gas delivery system is capable ~~to~~ of providing precise dopant concentration into a processing chamber for forming films having dopant content, such as BSG, PSG, BPSG, and other doped films. The liquid precursor for the dopant can be introduced into a vaporizer in divert mode for a preset time period sufficient for stabilized vaporization of the dopant precursor, typically 6-10 seconds, before the dopant is needed in the process chamber. Thus, when the dopant is needed and introduced into the chamber, the dopant vaporization is stabilized, and the resulting doped film exhibits substantially step-wise dopant concentration profiles.

**IN THE CLAIMS:**

Please cancel claims 1, 5, 7, 8, and 12-18 without prejudice and amend the claims as follows:

1. (Canceled)

2. (Currently Amended) ~~The~~ An apparatus ~~of claim 1, further~~ for delivering processing gas from a vaporizer to a processing system, comprising:

a valve connected between the vaporizer and the processing system, the valve having a valve input connected to a vaporizer output and a first valve output connected to a processing system input and a second valve output connected to a bypass line;

a controller for switching the valve between the first valve output and the second valve output; and

a second valve connected between a carrier gas source, a divert gas source and the vaporizer, the second valve having a first valve input connected to the carrier gas source, a second valve input connected to the divert gas source, and a valve output connected to a vaporizer input.

3. (Original) The apparatus of claim 2, wherein the controller is connected to switch the second valve between the first valve input and the second valve input.

4. (Previously Presented) The apparatus of claim 3, wherein the controller is connected to correspondingly switch the valve and the second valve.

5. (Canceled)

6. (Currently Amended) ~~The~~ An apparatus ~~of claim 5, further~~ for processing a substrate, comprising:

a chamber having a gas input;

a vaporizer;

a valve connected between the vaporizer and the chamber, the valve having a valve input connected to a vaporizer output and a first valve output connected to the gas input and a second valve output connected to a bypass line;

a controller for switching the valve between the first valve output and the second valve output; and

a second valve connected between a carrier gas source, a divert gas source and the vaporizer, the second valve having a first valve input connected to the carrier gas source, a second valve input connected to the divert gas source, and a valve output connected to a vaporizer input.

7-8. (Canceled)

9. (Currently Amended) ~~The~~ An apparatus ~~of claim 5, further~~ for processing a substrate, comprising:

a chamber having a gas input;

a vaporizer;

a valve connected between the vaporizer and the chamber, the valve having a valve input connected to a vaporizer output and a first valve output connected to the gas input and a second valve output connected to a bypass line;

a controller for switching the valve between the first valve output and the second valve output; and

at least one input valve connected between a gas source and the valve, the input valve having a plurality of inputs selectably connected to a plurality of gas supplies of the gas source and an output connected to the valve input.

10. (Previously Presented) The apparatus of claim 9, wherein the controller is connected to switch the input valve between a first valve input of the plurality of inputs and a second valve input of the plurality of inputs.

11. (Previously Presented) The apparatus of claim 10, wherein the controller is connected to correspondingly switch the valve and the input valve.

12-18. (Canceled)

19. (Currently Amended) ~~The~~ An apparatus ~~of claim 18, further~~ for delivering processing gas from a vaporizer to a processing system, comprising:

a valve means for selectively delivering gas to a processing system input and to a bypass line, the valve means being connected between the vaporizer and the processing system, wherein the valve means comprises a valve having a valve input connected to a vaporizer output and a first valve output connected to the processing system input and a second valve output connected to the bypass line;

a controller means for switching the valve means between the processing system input and to the bypass line; and

a second valve means connected between a carrier gas source, a divert gas source and the vaporizer, the second valve means having a first valve input connected to the carrier gas source, a second valve input connected to the divert gas source, and a valve output connected to a vaporizer input.

20. (Previously Presented) The apparatus of claim 19 wherein the controller means is connected to switch the second valve means between the first valve input and the second valve input.

21. (Previously Presented) The apparatus of claim 20, wherein the controller means is connected to correspondingly switch the valve means and the second valve means.

**IN THE DRAWINGS:**

The attached sheets of replacement drawings replace the originally filed informal drawings. In Figure 2, previously omitted reference numeral "126" has been added.

**Attachments:** **Replacement Sheets**
**Annotated Sheet Showing Change to Figure 2**

## REMARKS

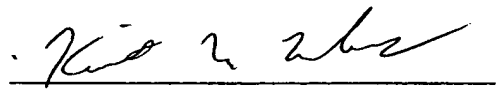
This amendment is filed to correct errors in the specification, amend the claims, and to replace the informal drawings with formal drawings. In the specification, paragraphs [0002], [0006], [0009], [0033], and [0037] have been amended to correct typographical and grammatical errors.

Applicants have canceled claims 1, 5, 7, 8, and 12-18. Applicants note that claims 12-16 had been previously withdrawn from consideration by the Examiner but had not been canceled by the Examiner or Applicants. Applicants have canceled claims 1, 5, 7, 8, 17, and 18 in view of a Supplemental Information Disclosure Statement submitted with this amendment. Applicants submit that the changes made herein do not raise new issues.

Formal drawings are being submitted to replace the originally filed informal drawings. In Figure 2, previously omitted reference numeral "126" has been added. Support for the amendment of Figure 2 is provided by paragraph [0023].

Applicants believe that no new matter has been introduced in this response. Entry of the amendments is respectfully requested.

Respectfully submitted,



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Facsimile: (713) 623-4846
Attorney for Applicant(s)

360350_1

ATTY DKT. NO.: AMAT/4515/DSM/PMD/JW
U.S. SERIAL NO.: 09/832,168 CONF. NO.: 8789
FILED: APRIL 10, 2001
APPLICANT: APPLIED MATERIALS, INC.
TITLE: CONCENTRATION PROFILE ON DEMAND GAS DELIVERY SYSTEM (INDIVIDUAL DIVERT DELIVERY SYSTEM)
INVENTOR: BANG, ET AL.





1/4

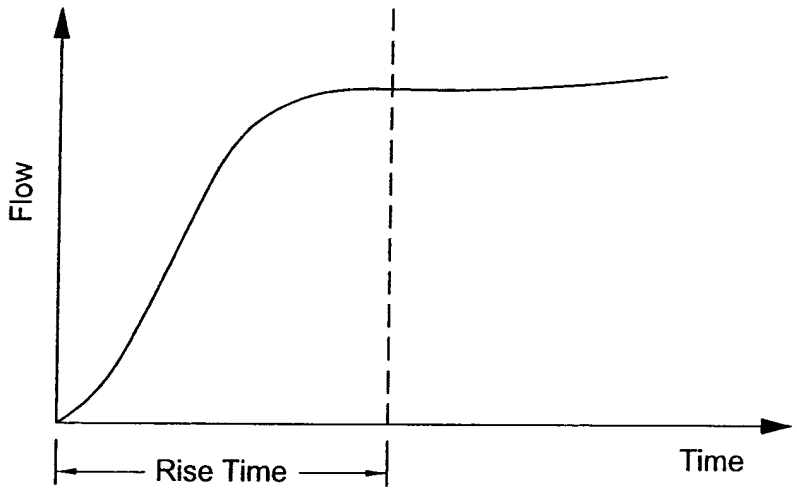



FIG. 1

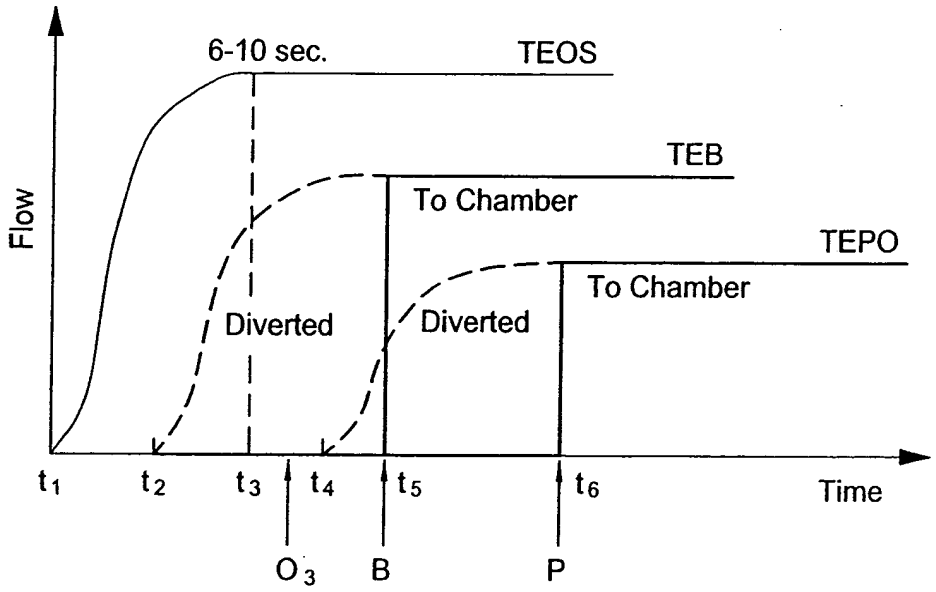
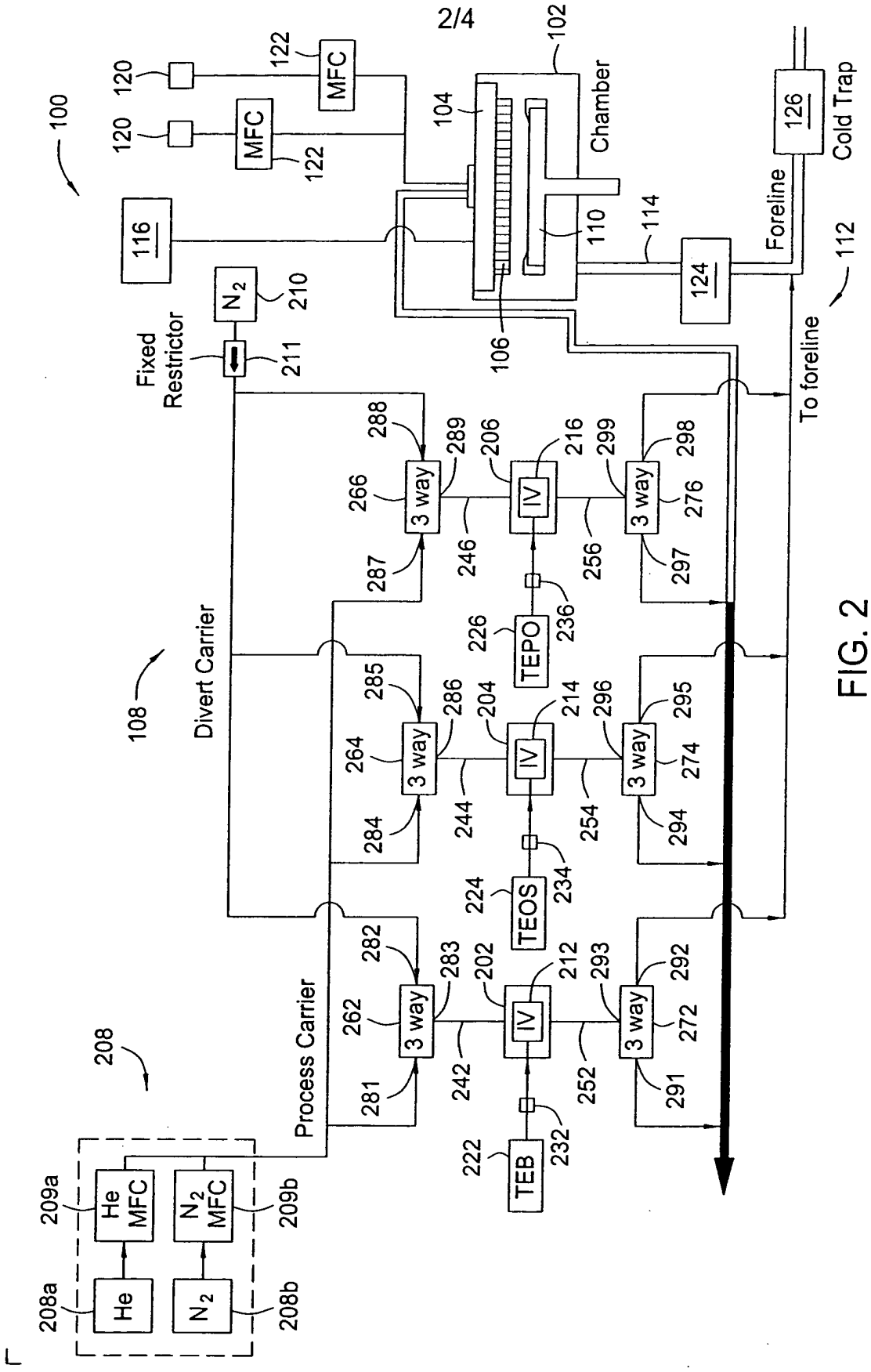



FIG. 4


100
102
Chamber
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Divert Carrier
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MFC
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126
Cold Trap
Foreline
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211
Fixed Restrictor
208
Process Carrier
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FIG. 2

3/4

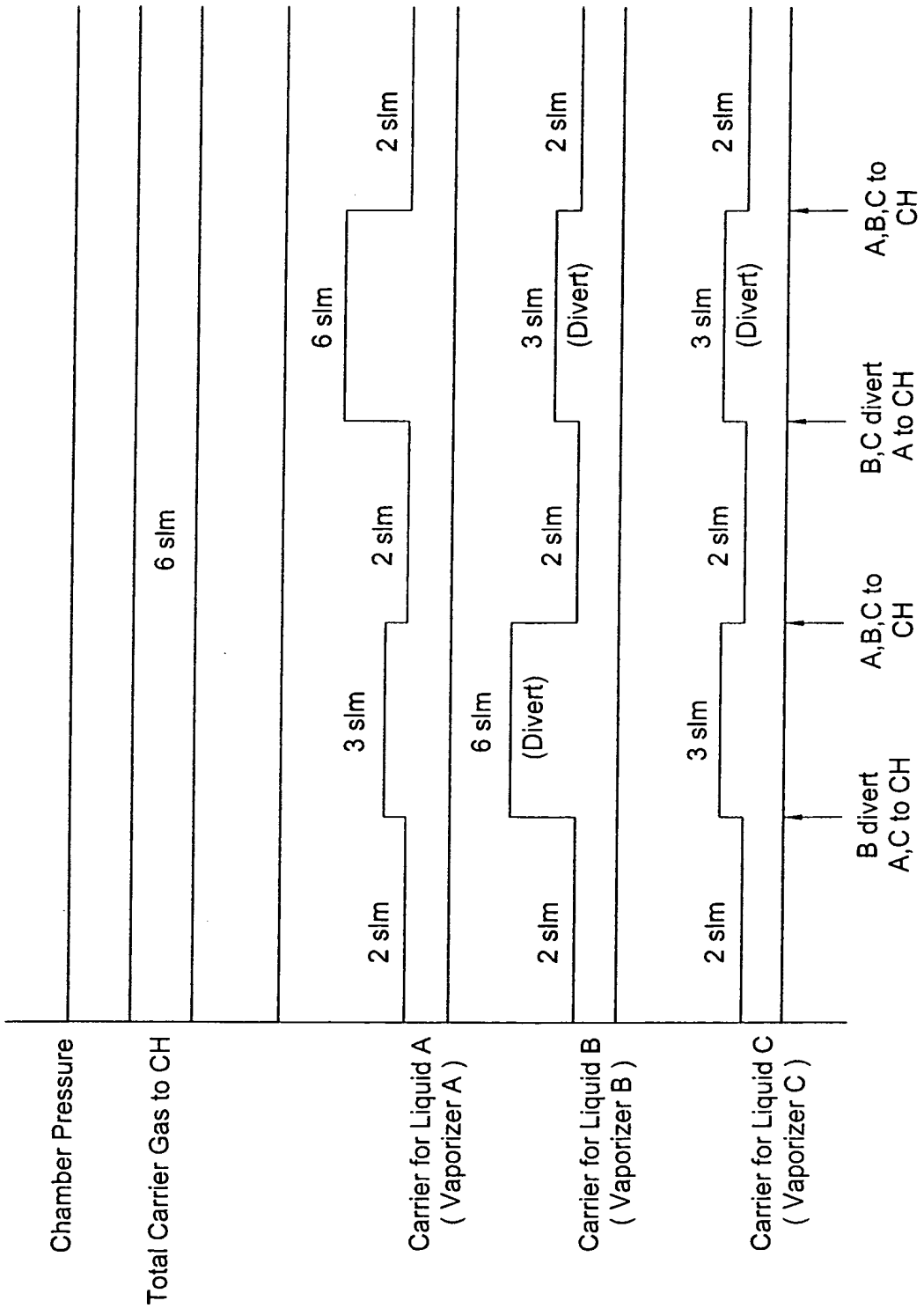

Chamber Pressure
Total Carrier Gas to CH
6 slm
Carrier for Liquid A ( Vaporizer A )
2 slm
3 slm
2 slm
6 slm
2 slm
Carrier for Liquid B ( Vaporizer B )
6 slm
2 slm
(Divert)
2 slm
3 slm
2 slm
Carrier for Liquid C ( Vaporizer C )
2 slm
3 slm
2 slm
(Divert)
2 slm
3 slm
B divert A,C to CH
A,B,C to CH
B,C divert A to CH
A,B,C to CH

FIG. 3

ATTY DKT. NO.: AMAT/4515/DSM/PMD/JW
U.S. SERIAL NO: 09/832,168 CONF. NO.: 8769
FILED: APRIL 10, 2001
APPLICANT: APPLIED MATERIALS, INC.
TITLE: CONCENTRATION PROFILE ON DEMAND GAS DELIVERY SYSTEM (INDIVIDUAL DIVERT DELIVERY SYSTEM)
INVENTOR: BANG, ET AL.





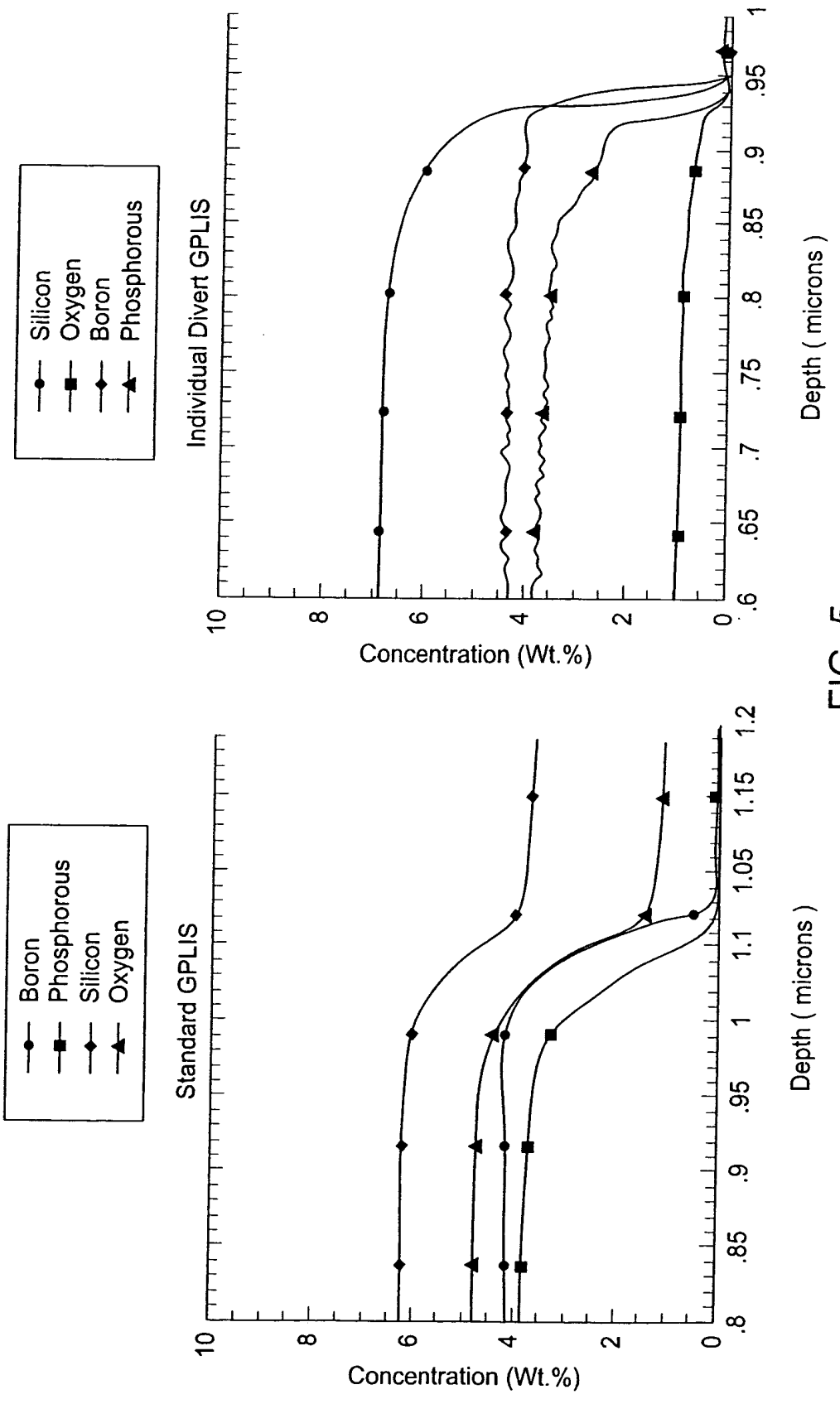
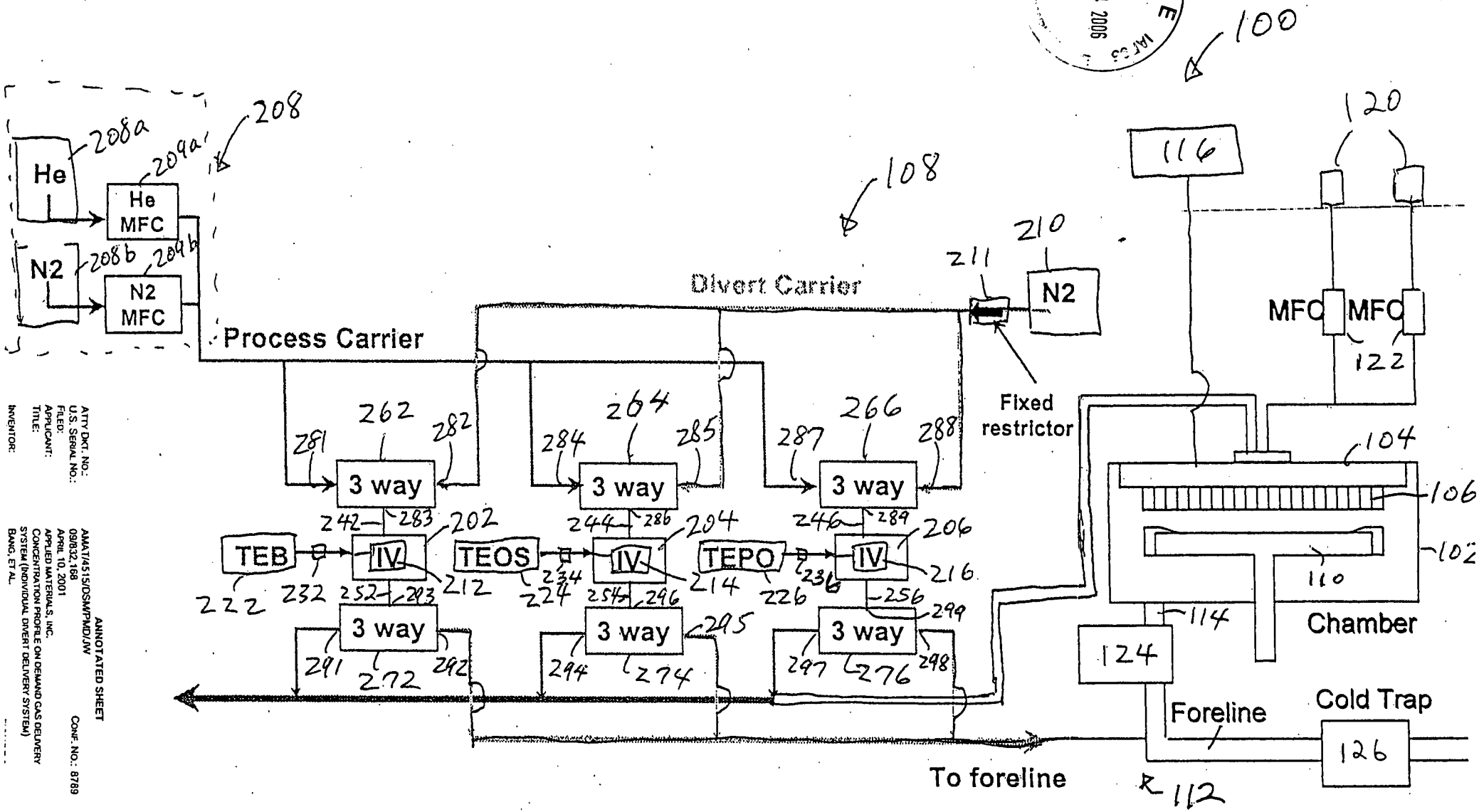



FIG. 5




ATTY DKT. NO.: AMAT/4515/DSM/PMD/JW
U.S. SERIAL NO.: 09/832,168
FILED: APRIL 10, 2001
APPLICANT: APPLIED MATERIALS, INC.
TITLE: CONCENTRATION PROFILE ON DEMAND GAS DELIVERY SYSTEM (INDIVIDUAL DIVERT DELIVERY SYSTEM)
INVENTOR: BANG, ET AL.
ANNOTATED SHEET
CONF. NO.: 8789

Figure 2

# IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:
Bang, et al.

Serial No.: 09/832,168

Confirmation No.: 8789

Filed: April 10, 2001

For: Concentration Profile on Demand Gas Delivery System (Individual Divert Delivery System)

Group Art Unit: 1763

Examiner: Rudy Zervigon

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Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

CERTIFICATE OF MAILING
37 CFR 1.8
I hereby certify that this correspondence is being deposited on 5/19, 2005 with the United States Postal Service as First Class Mail in an envelope addressed to: Mail Stop Issue Fee, Commissioner for Patents, P.O. Box 1450 Alexandria, VA 22313-1450.

5/19/05 [signature]
Date Signature

Dear Sir:

## SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT

The Applicants, and the Attorney who signs below on the basis of the information supplied by the inventor and the information in his file, submit herewith patents, publications, or other information of which they are aware, which may be material to the examination of this application and in respect of which there may be a duty to disclose in accordance with 37 CFR § 1.56.

While the information submitted in this Supplemental Information Disclosure Statement may be material pursuant to 37 CFR § 1.56, it is not intended to constitute an admission that any patent, publication, or other information referred to therein is prior art for this invention unless specifically designated as such.

In accordance with 37 CFR § 1.97, this Supplemental Information Disclosure Statement is not to be construed as a representation that a search has been made or that no other possibly material information as defined under 37 CFR § 1.56(a) exists.

The patents and/or publications submitted herewith are set forth on the attached Form PTO-1449.

No item of information contained in the information disclosure statement was cited in communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the supplemental information disclosure statement was known to any individual designated in § 1.56(c) more than three months prior to the filing of the information disclosure statement.

The Commissioner is hereby authorized to charge the sum of $180.00 due under 37 CFR § 1.17(p) pursuant to § 1.97, and any other fee necessary to make this submission timely, to the Deposit Account No. 20-0782/AMAT/4515/KMT.

Respectfully submitted,

Keith M. Tackett
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Facsimile: (713) 623-4846
Attorney for Applicant(s)

363869_1

PTO/SB/08a (08-03)
Approved for use through 07/31/2006. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE


Substitute for form 1449A/PTO

# SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT BY APPLICANT

*(Use as many sheets as necessary)*

Sheet 1 of 1

| *Complete if Known* | |
|---|---|
| *Application Number* | 09/832,168 |
| *Filing Date* | April 10, 2001 |
| *First Named Inventor* | Bang, et al. |
| *Art Unit* | 1763 |
| *Examiner Name* | Rudy Zervigon |
| *Attorney Docket Number* | AMAT/4515/DSM/PMD/JW |

## U.S. PATENT DOCUMENTS

| Examiner Initials * | Cite No.[1] | Document Number<br>Number - Kind Code[2] (*if known*) | Publication Date MM-DD-YYYY | Name of Patentee or Applicant of Cited Document | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear |
|---|---|---|---|---|---|
| | A1 | US-4,761,269 | 08/02/1988 | CONGER, ET AL. | |
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## FOREIGN PATENT DOCUMENTS

| Examiner Initials* | Cite No.[1] | Foreign Patent Document<br>Country Code[3] - Number[4] - Kind Code[5] (*if known*) | Publication Date MM-DD-YYYY | Name of Patentee or Applicant of Cited Document | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear | T[6] |
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| Examiner Signature | | Date Considered | |
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*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1] Applicant's unique citation designation number (optional). [2] See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3] Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [5] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. [6] Applicant is to place a check mark here if English language Translation is attached.

DOCKET No.: AMAT/4515/DSM/PMD/JW
SERIAL No.: 09/832,168
FILED: April 10, 2001
APPLICANT: Applied Materials, Inc.
INVENTOR: Bang, et al.

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